Amendments to the Drawings

None.

REMARKS

Claims 1 - 42 are pending in this application and stand rejected.

In the following, the Examiner's comments are included in bold, indented type, followed by the Applicants' remarks.

Specification Objections

> **The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.**

Applicants request the title of the invention be changed to "Query Expression Optimization." This new title is clearly indicative of the invention to which the claims are directed.

Objections Under 35 U.S.C. § 112

> **Claims 1, 5, 7, 15, 19, 21, 29, 33, and 35 are objected to under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

> **As per claims 1, 15, and 29, there is no description of what 'resolving columns' is that would enable the claims.**

Applicants disagree. A person of ordinary skill in the art would understand the meaning of resolving columns to include recognizing, in a SQL statement, column identifiers and logically associating the column identifiers with the identified column. In any case, applicants are removing this limitation from the claims. Applicants request that this rejection be withdrawn.

> **As per claims 5, 19, and 33, there is no description of what an 'inner table of an outer join' is that would enable the claims.**

Applicants disagree. This term is well known in the art and is discussed in the specification, for example, in paragraphs 23 and 42-44. Applicants request that this rejection be withdrawn.

As per claims 7, 21, and 35, there is no description of what an 'assignment list clause' is that would enable the claims.

Applicants disagree. A person of ordinary skill would understand that a clause in a SQL query that continues an assignment list is an assignment list clause. Processing of assignment list clauses is discussed and illustrated in the specification, for example, at paragraphs 22 and 26 and Figures 4A, 4B, and 6. Applicants request that this rejection be withdrawn.

Claim 2 is objected to for the following informality: after 'F(C) returns the return value', the expression is reduced 'to a return value' instead of 'the return value' previously mentioned. For purposes of examination, the claim is interpreted to read, 'then reducing the expression to the return value'.

Claim 16 is objected to for the following informality: claim 16 depends on itself. For purposes of examination, claim 16 will be interpreted to depend on claim 15. Appropriate correction is required.

Applicants have amended the claims to address these objections.

Rejections Under 35 U.S.C. § 102

Claims 1-3, 6-9, 11-17, 20-23, 25-31, 34-37, and 39-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Paulley et al., U.S. Pat. 6,665,664.

Paulley et al. disclose a method, computer program, and system, but only Applicant's method claims 1-3, 6-9, and 11-14 are reproduced here, as they are exemplary of Applicant's computer program claims 15-17, 20-23, and 25-28 and system claims 29-31, 34-37, and 39-42.

As per claims 1-3, 6-9, and 11-14, Paulley et al. teach:

1. A method of processing a database query, the query including one or more expressions, the method including:

resolving columns in one or more of the expressions (See e.g. **Brief Summary par. 29**, 'Socher's minimization method uses a matrix as its basic data structure with the rows of the matrix representing unique literals and the columns representing the particular conjunct (or disjunct) in which the literals appear');

performing expression optimization on one or more of the expressions (See e.g. **Brief Summary par. 31**, 'a preprocessing phase, in which expressions are simplified whenever possible');

performing further query optimization (See e.g. **Brief Summary par. 31**, 'a normalization phase, in which the simplified expression is analyzed and either fully converted to conjunctive normal form'); and

where the expression optimization is performed before further query optimization (See e.g. **Brief Summary par. 31**, 'This preprocessing phase includes several steps that are designed to simplify the original query expression, thereby simplifying the matrix processing occurring in the normalization phase').

2.   The method of claim 1, where each expression includes one or more sub-expressions, and where the expression optimization includes, for each expression:

(1)   if the expression has a form selected from the group consisting of "SE+0," "SE*1," and "SE/1," where SE is a sub-expression, then reducing the expression to SE;

(2)   if the expression has a form selected from the group consisting of "SE*0," "0/SE," and "0 MOD SE," where SE is a non-nullable sub-expression, then reducing the expression to 0; and

(3)   if the expression is of the form F(C), where F is a function and C is a constant and F(C) returns the return value, then reducing the expression to a return value (See e.g. **Detailed Description par. 40**, 'simplifies the expression by eliminating tautologies (statements that are always true) and simplifying predicates and operator conditions as follows: (a) Folding constant expressions when the expressions contain integers (e.g., x=3+4 is changed to x=7) and the columns referenced in the statement are numeric' where 'SE+0,' 'SE*1,' 'SE/1,' 'SE*0,' '0/SE,' and '0 MOD SE' are tautologies and 'x=3+4' is a function in the form 'F(C)').

Applicants disagree.   Claims 1, 15, and 29 have each been amended to include a

limitations from claim 2, 16, and 30, respectively.   Claim 1, for example, now includes a

limitation that "**each expression includes one or more sub-expressions**, and where the expression optimization includes, for each expression:(1) if the expression has a form selected from the group consisting of 'SE+0,' 'SE*1,' and 'SE/1,' **where SE is a sub-expression**, then reducing the expression to SE." This limitation is not disclosed by Paulley. The cited portion of Paulley discusses "simplif[ying] the expression by eliminating tautologies (statements that are always true) and simplifying predicates and operator conditions." Paulley, however, does not disclose that the expression including a sub-expression, which is required by the claims. Furthermore, Paulley's discussion of "eliminating tautologies" is not a disclosure of, for example, reducing SE*1 to SE, because the expression SE*1 is not a tautology. Paulley acknowledges this fact when it gives an example of a tautology as "1=1." Paulley, 13:57. Paulley's example tautology (1=1) is always true. On the other hand, SE*1 may have any range of values depending on SE. Unlike Paulley's "1=1," SE*1 is not always "true." For at least these reason, amended claims 1, 16, and 30 are patentable over Paulley. Each of the remaining claims depends from one of claim 1, 16, or 30 and is similarly patentable over the art of record.

SUMMARY

Applicants contend that the claims are in condition for allowance, which action is requested. Applicants authorize the Commissioner to debit $120.00 from NCR Deposit Account Number 14-0225, Order Number 11466 for a one-month extension of time. Should any additional fees be required, Applicant requests that the fees be debited from NCR Deposit Account Number 14-0225, Order Number 11466.

Respectfully submitted,

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